

WHAT IS CLAIMED IS:

1. Self-reducing agglomerates for use in the production of metal, comprising a mixture of metallic oxide containing particles and particles of a carbonaceous reducing agent, with said mixture being bonded by a pre-gel.

2. The agglomerates of claim 1, wherein said mixture includes particles of a fluxing agent.

3. The agglomerates of claim 1, wherein said metallic oxide containing particles include at least one of iron ore, industrial residue containing iron oxide with or without metallic iron, and oxides of metal other than iron.

4. A method for the production of self-reducing agglomerates for use in the production of metal comprising:

mixing metallic oxide containing particles, and particles of a carbonaceous reducing agent with a pre-gel;

introducing hot gas to said agglomerates at a sequentially decreasing temperature as the moisture content of said agglomerates decreases and the temperature of said agglomerates increases, wherein the temperature of the hot gas introduced to said agglomerates is controlled at a temperature to maintain the agglomerates below the combustion temperature thereof;

thereafter curing said agglomerates by heating said agglomerates at a temperature of about 100 to 180° C for about 10 to 60 minutes; and

thereafter introducing said agglomerates to a reduction chamber for the production of metal therefrom.

5. The method of claim 4, wherein said mixture includes particles of a fluxing agent.

6. The method of claim 4 or claim 5, wherein said pre-gel is a modified starch.

7. The method of claim 4, wherein said metallic oxide containing particles include at least one of iron ore, industrial residue containing iron oxide with or without metallic iron, and oxides of metals other than iron.

8. Apparatus for the continuous production of self-reducing agglomerates for use in the production of metal comprising:

means for conveying agglomerates comprising a mixture of metallic oxide containing particles, particles of a carbonaceous reducing agent, and a pre-gel binder;

means for introducing hot gas to said agglomerates while being conveyed on said means for conveying said introducing means including means for sequentially decreasing temperature of said hot gas introduced to said agglomerates as moisture content of said agglomerates decreases and the temperature of the agglomerates increases, wherein the temperature of the hot gas introduced to the agglomerates is controlled at a temperature to maintain the agglomerates below the combustion temperature thereof; and

means for controlling speed of said means for conveying to expose said agglomerates to said hot gas for about 10 to 60 minutes.

9. The apparatus of claim 8, including means for uniformly distributing said hot gas to said agglomerates while being conveyed.

10. The apparatus of claim 9, wherein said means for conveying includes a perforated belt allowing passage of said hot gas therethrough to said agglomerates.

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